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NEW COTTID FISHES FROM JAPAN AND BERING SEA

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Among the cottid fishes collected by the United States Bureau of Fisheries steamer *Albatross*, and kindly submitted to me for study by Dr. G. S. Myers, of the United States National Museum, are three new forms obtained during the cruise of 1906. The figures of these were drawn by the late William S. Atkinson under the direction of the late Dr. Charles Henry Gilbert. The fourth new cottid described herein was taken by the *Albatross* in Bering Sea in 1900.

Genus RICUZENIUS Jordan and Starks

Genotype.—*Ricuzenius pinetorum* Jordan and Starks.

A single specimen of a new species of fish from Yezo Strait shows so great a degree of relationship to the type species that I choose to include it in this genus. At the same time, the dissimilarities are so marked that it seems advisable to establish a new subgenus for its reception and to recharacterize the genus itself.

Description.—Head and body compressed throughout, deepest under anterior third of first dorsal. Maxillary extending to slightly beyond posterior margin of pupil. Anterior and posterior nostrils both in short tubes about 0.5 as long as nasal spines. Four short, simple, preopercular spines, the upper one slightly the longest; upper spine directed upward and backward, second spine backward and

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downward, third spine downward, lower spine downward and forward. No other spines on head. Pores of head moderate in size, anterior pores of mandibular series paired, no single pore on median line of symphysis. Gill membranes broadly united, free from isthmus. Branchiostegals 6. Moderately broad bands of cardiform teeth on premaxillaries, dentaries, and vomer, narrow band on palatines. Gills 3½, gill rakers in the form of short tubercles. Pelvic fins of 1 spine and 3 rays, middle ray the longest, inner ray the shortest. Scales of lateral line in the form of short tubes bearing strongly ctenoid ridges dorsally and with a few moderately developed spines along the outer posterior margin. General body scales in the form of subovoal plates, somewhat cupped from beneath and bearing transverse, ctenoid ridges posteriorly.

KEY TO THE KNOWN SPECIES OF RICUZENIUS

a.[1] Maxillary scaly; scales on spines and rays of dorsal fins; interorbital space transversely concave ..... pinetorum

a.[2] Maxillary naked; no scales on dorsal fins; interorbital space flat. nudithorax

Subgenus RICUZENIUS Jordan and Starks

Mandibular branch of lateral line system composed of clusters of small pores arranged in roughly oval patterns, the anterior pair of pores simple, enlarged. No slit behind last gill arch. Head and body almost completely covered with uniform scales, only lips, chin, gill membranes, and axilla naked.

RICUZENIUS PINETORUM Jordan and Starks

Ricuzenius pinetorum JORDAN and STARKS, Proc. U. S. Nat. Mus., vol. 27, p. 243, fig. 5, 1904; Bull. U. S. Fish Comm., vol. 22, p. 591, fig., 1902 (1904).—JORDAN, TANAKA, and SNYDER, Journ. Coll. Sci. Imp. Univ. Tokyo, vol. 33, p. 257, fig. 193, 1913.

Diagnosis.—Body deep, the distance from origin of first dorsal to pelvic base 4.0 (3.8–4.3) in standard length. Head large, 2.6 (2.4–2.7) in standard length. Mouth terminal, lower jaw equal to or slightly longer than upper. Interorbital space wide, 2.1 (1.8–2.3) in orbit, definitely grooved; top of head slightly concave. D. IX, 15 (14–16); A. 12 (11–13); P. 16 (16–17). Lateral line armed with 37 (35–38) scales.

In the type description of this species Jordan and Starks made the unfortunate error of stating that the ventral fins had "a concealed spine and 2 soft rays each", the error being introduced into the key also. The true count, which Dr. G. S. Myers has been kind enough to verify on the type specimen, is I, 3.

NOVIRICUZENIUS,[1] new subgenus

Genotype.—Ricuzenius nudithorax.

Mandibular branch of lateral line system composed of moderately large, simple pores. A well-developed slit behind the last gill arch. Sides of head below midline of orbit, naked; scales on ventral portion of body much reduced in size and number.

RICUZENIUS NUDITHORAX,[2] new species

FIGURE 5

Description.—Depth of body, measured from origin of first dorsal to pelvic base, 4.8 in standard length, 1.6 in head; width at dorsal end of pectoral base 2.0 in head. Dorsal body contour forming a very gentle sigmoid curve, the ventral contour a very gentle convex curve, from the deepest point to the caudal peduncle, the least depth of which is 1.6 in orbit.

Head 3.0 in standard length; snout 1.1 in orbit, forming an angle of about 67° with chin, of about 148° with frontoparietal region. Lower jaw slightly shorter than upper, barely included. Eye rather small, diameter of orbit 3.3 in head. Interorbital space flat, its width about 4.0 in orbit, 1.5 in posterior width of maxillary. Top of head flat, without any well-defined frontoparietal ridges. Nasal spines slender, sharp, equal to about 0.6 interorbital space. Pores of head moderate in size; a series bordering suborbitals both dorsally and ventrally.

Origin of first dorsal very slightly in advance of upper end of gill opening; base of fin 1.7 in head; fin of 10 spines; the first two with approximate bases, very slightly shorter than third spine, which is longest, being 2.2 in head. Second dorsal contiguous to first dorsal; base of fin 2.6 in standard length; fin of 21 rays; first ray 2.0 in fifth ray, which is longest, being 1.9 in head. Origin of anal about under second dorsal ray, its posterior end under second ray from end of second dorsal; base of fin 2.9 in standard length; fin of 19 rays; tenth to sixteenth rays subequal and longest, being 2.6 in head. Pectoral base 3.2 in head; fin of 16 rays; longest ray 1.1 in head, extending to level of seventh anal ray. Base of pelvics behind lower end of pectoral base at a distance equal to about 0.4 pupil; length of fin 2.3 in head; fin extending about 0.6 distance to anal origin. Caudal truncate; with 9 split rays; its length 1.5 in head. Anus in advance of anal origin at a distance equal to about 0.5 orbit; located just anterior to the base of a short, bluntly conical, genital papilla, which is about equal in length to nasal spines.

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[1] From *novus*, new + *Ricuzenius*.
[2] From *nudus*, naked + *thorax*, breast.

Entire interorbital space and top of head above a line from middle of posterior margin of orbit to upper end of gill opening covered with small scales; these continuous posteriorly with a band of scales of irregular size, most of them larger than those of the head, covering the entire body above the lateral line. A triangular naked patch under the anterior end of the lateral line, bordered ventrally and posteriorly by a band of enlarged scales extending upward and backward from the axilla to the arch of the lateral line; this band merges posteriorly into smaller scales, rather widely spaced and tending toward imbricated arrangement, which cover the posterior portion of the body below the lateral line with the exception of a narrow streak along the base of anal fin and ventral surface of caudal peduncle; these scales, which near the lateral line approximate the size of the dorsal scales, become minute ventrally. A few minute scales occur just anterior to the base of the pelvic fins and in a narrow, irregular, median line extending from slightly behind

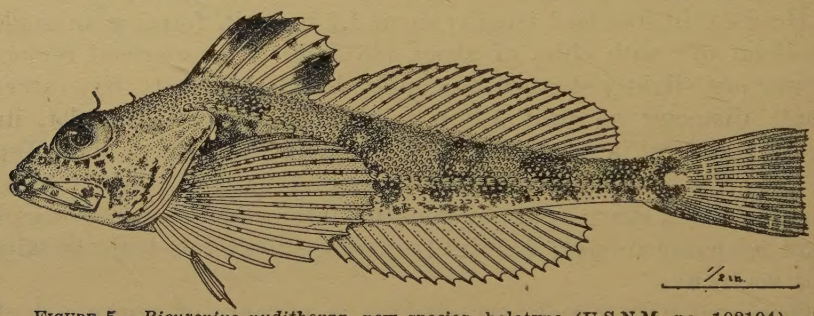

FIGURE 5.—*Ricuzenius nudithorax*, new species, holotype (U.S.N.M. no. 102104).

the base of pelvics to just in front of anus, where the line bifurcates and is continuous with the lower band of posterior body scales. A few scattered, minute scales occur dorsal to this line. The number of spines on the general body scales is roughly dependent upon the size of the scales themselves, which varies greatly. Lateral line armed with 44 large scales.

Eyeball bearing a band of small fleshy papillae bordering the iris dorsally and anteriorly; these evidently represent vestigial remnants of scale pockets, small scales being found in the same position in *Ricuzenius pinetorum*. Two minute cirri near lower margin of preorbital, one just in advance of and one behind the anterior pore. A single simple cirrus near posterior edge of maxillary; a long slender cirrus at upper posterior margin of each orbit; two similar cirri, of progressively smaller size, in line behind each of these; a simple or branched cirrus midway on suborbital stay; a simple cirrus on base of the lower two or three preopercular spines; a minute cirrus near posterior end of opercle; a single cirrus just behind the gill opening and midway between lateral line and upper

end of pectoral base; a cirrus on one or two of the lateral line scale margins under the anterior part of second dorsal; one to three cirri on about 10 scattered scale margins below the lateral line; none above lateral line.

TABLE 1.—*Measurements of holotype of* Ricuzenius nudithorax

Measurement	Mm	Percent of standard length
Standard length	61. 3	--------
Origin of first dorsal to pelvic base	12. 8	20. 9
Origin of second dorsal to anal origin	11. 8	19. 3
Least depth of caudal peduncle	3. 8	6. 2
Distance between dorsal ends of pectoral bases	10. 0	16. 3
Length of head	20. 4	33. 3
Diameter of orbit	6. 1	10. 0
Length of snout	5. 4	8. 8
Length of maxillary	9. 9	16. 2
Snout to origin of first dorsal	17. 7	28. 9
Base of first dorsal	12. 3	20. 1
Snout to origin of second dorsal	29. 2	47. 2
Base of second dorsal	24. 0	39. 2
Snout to anal origin	30. 2	49. 3
Base of anal	20. 8	33. 9
Snout to dorsal end of pectoral base	18. 2	29. 7
Snout to ventral end of pectoral base	15. 8	25. 8
Width of pectoral base	6. 3	10. 3
Length of pectoral	19. 2	31. 3
Snout to pelvic base	17. 1	27. 9
Length of pelvic	8. 7	14. 2
Length of caudal	13. 8	22. 5
Snout to anus	26. 7	43. 6

General body color in alcohol brownish yellow. Top of head with a reddish-brown patch; cheeks marbled with the same color. Back crossed by 5 reddish-brown cross bars; the first under middle of first dorsal, extending downward and forward to upper end of pectoral base; the second, under the anterior part of second dorsal, extending downward to near base of anal; third and fourth bars, under middle and posterior end of second dorsal, bifurcating at level of lateral line and tending to merge ventrally; fifth bar on caudal peduncle sending a branch posteriorly to base of caudal fin. First dorsal marked anteriorly and posteriorly with prominent distal patches of color. Second dorsal, caudal, and pectorals barred with reddish brown. Pelvics and anal colorless.

Holotype.—U.S.N.M. no. 102104; a specimen 61.3 mm in standard length, from *Albatross* station 5031, Yezo Strait, Japan, lat. 44°04′ N., long. 145°32′ E., 86 fathoms. This is the only specimen known.

ATOPOCOTTUS,[3] new genus

Genotype.—Atopocottus tribranchius.

Preopercle armed with 4 well-developed spines, the upper one enlarged and branched. Gill membranes broadly united, free from isthmus. Branchiostegals 6. Teeth in cardiform bands on premaxillaries, dentaries, vomer, and palatines. Gills 3; no filaments on last gill arch and no slit behind it. Gill rakers in the form of short tubercles. Pelvics I, 2. Scales occurring on anterior part of lateral line only, not extending beyond end of first dorsal.

The affinities of this strange cottid are obscure. Its nearest relatives are probably to be sought among the allies of *Pseudoblennius.*

ATOPOCOTTUS TRIBRANCHIUS,[4] new species

FIGURE 6

Body slightly compressed throughout, suboval in cross section; deepest under anterior part of first dorsal, the distance from origin of first dorsal to pelvic base 1.6 (1.5–1.7) in head, width at dorsal end of pectoral base 1.8 (1.6–2.0) in head. Anterior portion of body together with head forming a suboval mass, from which the posterior portion of the body extends with almost straight dorsal and ventral contours to the caudal peduncle. At the junction of these two body masses, just posterior to the anus, occurs a distinct break in body outline. Least depth of caudal peduncle 2.4 (2.2–2.7) in orbit.

Head 2.6 (2.5–2.7) in standard length; snout 1.7 (1.4–2.0) in orbit, moderately steep, forming an angle of 70° (63°–75°) with chin, of 134° (122°–139°) with frontoparietal region. Lower jaw somewhat shorter than upper, slightly included; maxillary extending to somewhere between middle and posterior margin of pupil. Anterior nostrils in short tubes; posterior nostrils without elevated margins, indistinguishable from pores of lateral line system. Eye large, diameter or orbit 2.5 (2.4–2.6) in head. Interorbital space flat, narrow, about 2.0 in posterior width of maxillary. Top of head very gently concave. No free nasal spines and no spines on top of head. Four preopercular spines; the upper one 1.8 (1.3–2.1) in orbit, directed upward and backward, slightly curved, with a simple or bifid tip and bearing one or two secondary spines on its upper margin; these, in turn, often bifid; the three lower spines simple and sharp, their length about equal to interorbital width, the upper one directed backward, the middle one backward and downward, the lower one almost straight downward. Pores of head large; most conspicuous are the series that occur along the ventral margin of suborbital chain extending upward behind the eye, and the series along the preopercular margin continued forward as the mandib-

[3] From ἄτοπος, extraordinary + *Cottus.*

[4] From τρεῖς, three + βράγχια, gills.

ular series, the anterior pores of which are paired; no single median pore on symphysis.

Origin of first dorsal on a perpendicular about midway between upper end of gill opening and posterior end of subopercle ("opercular flap"); base of fin 2.4 (2.2–2.8) in head; fin of 7 (7–8) spines; first two with approximate bases, usually subequal in length and longest, being 3.4 (2.9–3.7) in head; third spine shorter than second or fourth, forming a marked notch in fin outline. Second dorsal separated from first by a wide interspace 1.6 (1.1–2.1) in orbit; base of fin 1.5 (1.3–1.6) in head; fin of 11 (11–12) rays; first ray 2.0 (1.6–2.9) in fourth, fifth, or sixth ray, which is longest, being 2.3 (2.1–2.7) in head. Origin of anal under second, third, or fourth dorsal ray; its posterior end under the second, third, or fourth ray from end of second dorsal; base of fin 2.3 (2.1–2.6) in head; fin of 8 (6–9) rays; first ray 1.5 (1.1–2.2) in fourth or fifth ray, which is

FIGURE 6.—*Atopocottus tribranchius*, new species, holotype (U.S.N.M. no. 102105).

longest, being 2.7 (2.4–2.9) in head. Pectoral base 2.7 (2.5–2.9) in head; fin of 19 (17–20) rays; longest ray 1.3 (1.2–1.5) in head, extending to somewhere between anus and anal origin. Base of pelvics immediately behind lower end of pectoral base; fins rather widely separated, the distance between them roughly equal to distance from pelvic base to lower end of pectoral base; inner ray the longer; length of fin 1.9 (1.8–2.3) in head, extending 0.5 (0.4–0.6) distance to anal origin. Caudal truncate with 7 (6–8) split rays, its length 1.6 (1.4–1.8) in head. Anus in front of anal origin at a distance about equal to diameter of pupil; located just anterior to the base of a very short, bluntly conical, genital papilla, which in the male is free, in the female surrounded by and partly embedded in a folded fringe of skin.

Anterior part of lateral line armed with 4 (3–6) deeply embedded scales; each scale in the form of a short simple tube pierced by large fenestrae; posteriorly the lateral line is continued to base of caudal by 27 to 29 minute pores, very difficult to distinguish; their position and number may readily be determined if congealed mucus

can be peeled from the specimen, each pore leaving a clear-cut hole in the mucous film. No scales other than those of lateral line. No cirri on head or body.

TABLE 2.—*Measurements of* Atopocottus tribranchius

Measurement	Percent of standard length
Origin of first dorsal to pelvic base	24.0 (23.1–25.5)
Origin of second dorsal to anal origin	15.1 (14.2–16.8)
Least depth of caudal peduncle	6.3 (5.5–6.8)
Distance between dorsal ends of pectoral bases	21.5 (19.5–24.2)
Length of head	38.8 (37.2–41.3)
Diameter of orbit	15.4 (14.7–16.6)
Length of snout	9.1 (7.7–10.9)
Length of maxillary	16.9 (15.8–17.9)
Snout to origin of first dorsal	36.5 (34.7–38.6)
Base of first dorsal	16.1 (13.6–17.6)
Snout to origin of second dorsal	58.3 (55.8–63.2)
Base of second dorsal	26.4 (24.9–29.2)
Snout to anal origin	61.5 (58.8–63.2)
Base of anal	16.8 (15.1–18.6)
Snout to dorsal end of pectoral base	36.3 (35.1–37.8)
Snout to ventral end of pectoral base	26.6 (25.2–28.8)
Width of pectoral base	14.7 (13.2–16.2)
Length of pectoral	29.4 (26.4–31.6)
Snout to pelvic base	27.5 (26.4–28.8)
Length of pelvic	19.9 (17.9–21.3)
Length of caudal	24.4 (21.3–27.4)
Snout to anus	55.0 (52.6–56.6)

General body color in alcohol brownish yellow. Body blotched with reddish-brown spots, the anterior ones tending to merge into a broad cross bar under the anterior dorsal. Ventral surface whitish. A large diffuse reddish-brown blotch on posterior, distal portion of first dorsal, second dorsal coarsely barred with brown. A spot of same color on base of upper caudal rays. Upper pectoral rays faintly barred with reddish brown; a spot of brown at the base of these rays. Pelvics and anal colorless.

Holotype.—U.S.N.M. no. 102105; a male specimen 27.7 mm in standard length; from *Albatross* station 4816, lat. 38°14′ N., long. 138°54′ E., in 64 fathoms.

Paratypes.—U.S.N.M. no. 102106; 7 specimens 23.0–28.5 mm in standard length, from *Albatross* station 4817, lat. 38°12′ N., long. 138°52′ E., in 61 fathoms; Nat. Hist. Mus. Stanford Univ. no. 30457; 3 specimens 22.6–27.0 mm in standard length, from *Albatross* station 4815, lat. 38°16′ N., long. 138°52′ E., in 70 fathoms. These stations are all off Nugatu, Japan.

This species is apparently the smallest of the cottids, the series of specimens evidently representing adults. The largest specimen, a female 28.5 mm in standard length, contains well-developed eggs.

Eight of the 11 specimens are infested by a copepod parasite of the family Lernaeidae, which attaches itself to the eye.

PHASMATOCOTTUS,[5] new genus

Genotype.—Phasmatocottus ctenopterygius.

Preopercle armed with four well-developed spines, the upper one enlarged and antlerlike. Gill membranes united, joined to isthmus, forming a fold across it. Branchiostegals 6. Cardiform teeth in a double series on anterior part of premaxillary and dentaries, merging into a wide band posteriorly, widely spaced in a single series on vomer, none on palatines. Gills 3½, no slit behind fourth arch; gill rakers in the form of short tubercles. Dorsal spines unconnected by membrane; a single minute spine (?) at origin of anal; pelvics I–2. No scales other than those of lateral line. Lateral line pores double.

This genus probably represents an ancient offshoot from the *Zesticelus* line of development.

PHASMATOCOTTUS CTENOPTERYGIUS,[6] new species

FIGURE 7

Head and anterior part of body depressed, posterior part subcircular in section; body deepest at anterior end of first dorsal, distance from origin of first dorsal to pelvic base 2.1 in head; width at dorsal end of pectoral base 1.9 in head. Ventral body contour gently rounded anteriorly; dorsal contour and posterior part of ventral contour forming almost straight lines from origin of first dorsal and from anus, respectively, to caudal peduncle, the least depth of which is 2.3 in orbit.

Head 2.6 in standard length; snout 1.3 in orbit, not steep, forming an angle of about 58° with chin, of about 138° with frontoparietal region; mouth terminal, lower jaw equal to upper; maxillary extending to slightly beyond anterior margin of pupil. Anterior and posterior nostrils in short tubes the anterior ones almost as long as nasal spines, posterior ones about half as long. Size of eye moderate, diameter of orbit 3.0 in head. Interorbital space narrow, about 1.3 in posterior width of maxillary; top of head gently concave. Nasal spines small, sharp, erect, their length equal to about 0.7 interorbital space; a pair of very small but sharp spines on top

[5] From φάσμα, specter + *Cottus*.
[6] From κτενίζω, to comb + πτερύγιον, fin.

of head at posterior end of frontoparietal ridges, directed backward and inward; preopercle armed with 4 spines, the upper one about 1.1 in orbit, directed upward and backward, slightly curved; on the left side of the type it has a simple tip and two strong recurved barbs along its upper margin; on the right side both the tip and the single recurved barb are bifid; the three lower preopercular spines simple, sharp, somewhat longer than nasal spines, the upper two directed downward and backward, the lower one downward and forward. Pores of head very large and conspicuous; the suborbital chain of bones bordered dorsally and ventrally by large pores; the upper series continued around the orbit; those pores that are dorsal and posterior to the eye opening through the skin of the eyeball itself instead of in interorbital space; the lower series continued backward on cheek to near base of upper preopercular spine, from which point

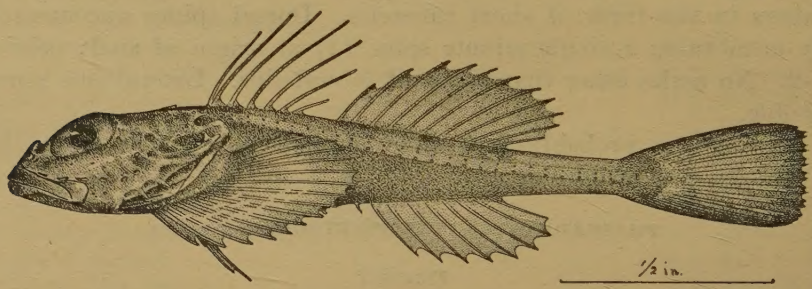

FIGURE 7.—*Phasmatocottus ctenopterygius*, new species. The true formula of the dorsal fins of the type is VI, 12, not VII, 11, as shown in the figure, which may have been made from a second specimen, since lost.

it swings dorsally; pores of marginal preopercular series continued forward as large simple mandibular pores, the anterior pair opening in a common pit on the median line of symphysis.

Origin of first dorsal very slightly behind upper end of gill opening; base of fin 2.5 in head; fin of 6 detached spines unconnected by membrane, the first two with approximate bases; first spine 1.3 in third spine, which is longest, being 1.8 in head. Second dorsal separated from first by an interspace about 2.1 in orbit; base of fin 1.5 in head; fin of 12 rays, first ray 1.5 in seventh ray, which is longest, being 2.3 in head. Origin of anal about under second dorsal ray, its posterior end under second ray from end of second dorsal; base of fin 1.7 in head; fin of 1 detached spine (?)[7] and 8 rays. First

[7] The small structure at the anterior end of the anal fin in this fish certainly appears to be a spine, although it may possibly be the basal portion of a broken ray that has attained a sharp point and smooth appearance. It is only the absence of anal spines in all other cottids except *Ochotskia armata* Schmidt, with which this species shows no close relationship, that causes me to question its character. It may be possible that this species has retained one anal spine as a primitive feature, and only examination of a second specimen can clear up this point.

anal ray 1.2 in third ray, which is longest, being 2.6 in head. Pectoral base 2.3 in head; fin of 18 rays; longest ray 1.7 in head; fin extending to level of third dorsal ray. Base of pelvics behind lower end of pectorals at a distance about equal to posterior width of maxillary; inner ray the longer, extending about 0.7 distance to anus. Caudal truncate, with 8 split rays, its length 1.6 in head. Anus in front of anal origin at a distance about 2.5 in orbit; located just anterior to the base of a slender, fingerlike, genital papilla, about as long as nasal spine.

Lateral line armed with 27 delicate, deeply embedded scales, each scale in the form of an incomplete tube, the lateral face open, dorsal and ventral surfaces pierced by several fenestrae. Pores of lateral line occurring in a double series, each pore of the lower series matched by a smaller one directly above it. No scales other than those of lateral line. A single minute cirrus on dorsal part of eyeball, no others on head or body.

TABLE 3.—*Measurements of holotype of* Phasmatocottus ctenopterygius

Measurement	Mm	Percent of standard length
Standard length	38. 0	--------
Origin of first dorsal to pelvic base	7. 0	18. 4
Origin of second dorsal to anal origin	4. 7	12. 4
Least depth of caudal peduncle	2. 1	5. 5
Distance between dorsal ends of pectoral bases	7. 6	20. 0
Length of head	14. 6	38. 4
Diameter of orbit	4. 8	12. 6
Length of snout	3. 6	9. 5
Length of maxillary	5. 7	15. 0
Snout to origin of first dorsal	13. 1	34. 5
Base of first dorsal	5. 9	15. 5
Snout to origin of second dorsal	20. 4	53. 7
Base of second dorsal	9. 9	26. 0
Snout to anal origin	20. 5	54. 0
Base of anal	8. 4	22. 1
Snout to dorsal end of pectoral base	14. 0	36. 8
Snout to ventral end of pectoral base	9. 0	23. 7
Width of pectoral base	6. 3	16. 6
Length of pectoral	8. 8	23. 2
Snout to pelvic base	10. 4	27. 4
Length of pelvic	6. 3	16. 6
Length of caudal	9. 0	23. 7
Snout to anus	18. 7	49. 2

Color in alcohol pale brownish yellow, with practically no indication of markings.

Holotype.—U.S.N.M. no. 102107; a specimen 38 mm in standard length, from *Albatross* station 5050, off Sendai Bay, Japan, lat. 38°11′30″ N., long. 142°08′00″ E., in 266 fathoms. This is the only specimen known.

STLEGICOTTUS,[8] new genus

Genotype.—Stlegicottus xenogrammus.

Preopercle armed with 4 simple spines. Gill membranes broadly united, free from isthmus; branchiostegals 6. Teeth in moderately broad cardiform bands on premaxillaries, dentaries, and vomer, in narrow bands on palatines. Gills 3½; no slit behind fourth arch; gill rakers in the form of short tubercles. Pelvics I, 3. Lateral line not extending beyond end of anal fin.

This is an isolated genus probably representing an early offshoot from the line of descent that later gave rise to *Ricuzenius* on the one hand and the *Artedius-Stelgistrum* group on the other.

STLEGICOTTUS XENOGRAMMUS,[9] new species

FIGURE 8

Head and anterior portion of body forming a subovate mass from which the posterior part of the body extends with a broad transverse groove forming a line of demarcation ventrally at the level of the anal origin; body slightly compressed throughout; deepest at anterior end of first dorsal, the distance from the origin of first dorsal to pelvic base 1.8 in head; width at dorsal end of pectoral base 2.4 in head. Dorsal contour almost straight posterior to origin of first dorsal; ventral contour forming a double convex curve, the anterior curve well marked between the mouth and anal origin, the posterior curve very gentle, extending between anal origin and caudal peduncle, the least depth of which is 2.4 in orbit.

Head 2.6 in standard length. Snout 1.6 in orbit, moderately steep, forming an angle of 64° with chin, of 143° with frontoparietal region; lower jaw very slightly shorter than upper jaw, barely included; maxillary extending beyond middle of pupil but not reaching its posterior margin. Anterior nostrils in well-developed tubes about 0.5 as long as nasal spines; posterior nostrils without elevated margins, indistinguishable externally from mucous pores. Size of eye moderate, orbit 2.9 in head. Interorbital space flat, narrow, about 1.7 in posterior width of maxillary; top of head very gently concave. Nasal spines sharp, moderate in size, about 1.3 in interorbital space; preopercular spines short, simple, sharp; the upper one the longest, about equal to interorbital width, directed upward and backward,

[8] From στλεγγίς, a scraper + *Cottus*.
[9] From ξένος, strange + γραμμή, line.

second spine directed backward, third spine backward and downward, fourth spine downward and forward. Pores of head well developed; suborbital series very large, their vertical or lesser diameter equal to 0.5 suborbital width; a few minute pores above these; preopercular-mandibular series also large, the anterior pores paired.

Fins in poor condition in the unique type, most of the rays broken and the membrane completely gone. Origin of first dorsal directly over upper end of gill opening; base of fin 2.1 in head; fin of 9 spines, the first two with approximate bases; first spine 1.3 in third and fourth spines, which are subequal and longest, being 2.8 in head. Second dorsal separated from first by a narrow interspace

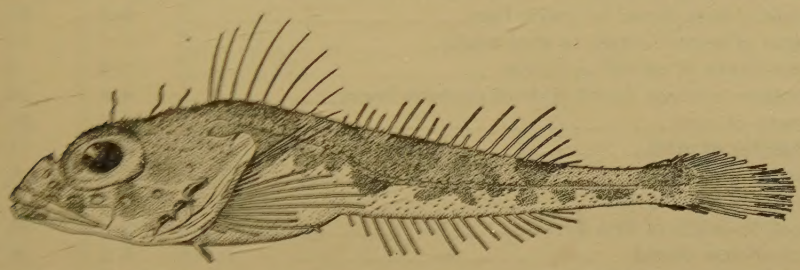

FIGURE 8.—*Stlegicottus xenogrammus*, new species, holotype (U.S.N.M. no. 102108).

equal to about 0.4 posterior width of maxillary; base of fin 1.1 in head; fin of 19 rays. Origin of anal about under second dorsal ray, its posterior end under second ray from end of second dorsal; base of fin 1.3 in head; fin of 17 rays. Pectoral base 3.4 in head; fin of 18 rays. Base of pelvics very slightly behind lower end of pectoral base. Anus advanced from anal origin about 0.25 distance to pelvic base; located immediately in front of a very short, bluntly conic, genital papilla.

Head behind the eyes and dorsal to the midlevel of the posterior orbital border covered with minute scales, a few scattered elements extending anteriorly throughout the interorbital space and occurring sparsely on the upper portion of the eyeball; the scaled area of head continuous with a broad band of slightly larger scales covering the entire dorsal surface of the body; similar scales form a streak below the lateral line extending from just behind the axilla to base of caudal and occupying approximately the dorsal 0.6 of the region between lateral line and base of anal. These scales are in the form of small oval plates bearing a single spine posteriorly, which is rarely bifurcated. Lateral line armed with about 30 scales, which are in the form of short incomplete tubes, the outer part broken by a wide longitudinal slit, a single moderately strong spine at the upper posterior angle and another at the lower posterior angle. The armature of the lateral line extends almost to the end of the anal fin; no

pores are visible posterior to this point. A long slender cirrus, about equal to diameter of pupil, at upper posterior margin of orbit; two similar cirri in line behind this, one on the middle of frontoparietal ridge and one at its posterior end; a single slender cirrus near posterior end of opercle; no cirri on body.

TABLE 4.—*Measurements of holotype of* Stlegicottus xenogrammus

Measurement	Mm	Percent of standard length
Standard length	29. 1	--------
Origin of first dorsal to pelvic base	6. 3	21. 6
Origin of second dorsal to anal origin	4. 1	14. 1
Least depth of caudal peduncle	1. 6	5. 5
Distance between dorsal ends of pectoral bases	4. 8	16. 5
Length of head	11. 3	38. 8
Diameter of orbit	3. 9	13. 4
Length of snout	2. 4	8. 2
Length of maxillary	5. 2	17. 9
Snout to origin of first dorsal	9. 8	33. 7
Base of first dorsal	5. 3	18. 2
Snout to origin of second dorsal	14. 9	51. 2
Base of second dorsal	10. 1	34. 7
Snout to anal origin	15. 1	51. 8
Base of anal	8. 7	29. 8
Snout to dorsal end of pectoral base	10. 3	35. 4
Snout to ventral end of pectoral base	8. 6	29. 5
Width of pectoral base	3. 3	11. 3
Snout to pelvic base	8. 7	29. 9
Snout to anus	13. 3	45. 7

General body color in alcohol brownish yellow; three reddish-brown bars extending downward from eye, the first toward tip of lower jaw, the second to base of expanded portion of maxillary, the third to just behind the maxillary, where it spreads out posteriorly on the preopercle; dorsal portion of body marked with similar color, which tends to form diffuse cross bars extending to well below the lateral line; the three most distinct bars are under the middle of first dorsal and under the anterior and posterior thirds of second dorsal; almost no indication of color on fins except a reddish-brown blotch on middle of pectoral base.

Holotype.—U.S.N.M. no. 102108; a specimen 29.1 mm in standard length from *Albatross* station 3785, in the south-central Bering Sea, 150 miles north of the Rat Islands; depth 270 fathoms.

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